DOES THE NEED EXIST TO CHANGE THE EXISTING MEDICAL ASSEMBLAGE LIFECYCLE MANAGEMENT PROCESS IN ORDER TO SUCCESSFULLY OPERATE IN FULL-SPECTRUM OPERATIONS?

A thesis presented to the Faculty of the U.S. Army Command and General Staff College in partial fulfillment of the requirements for the degree

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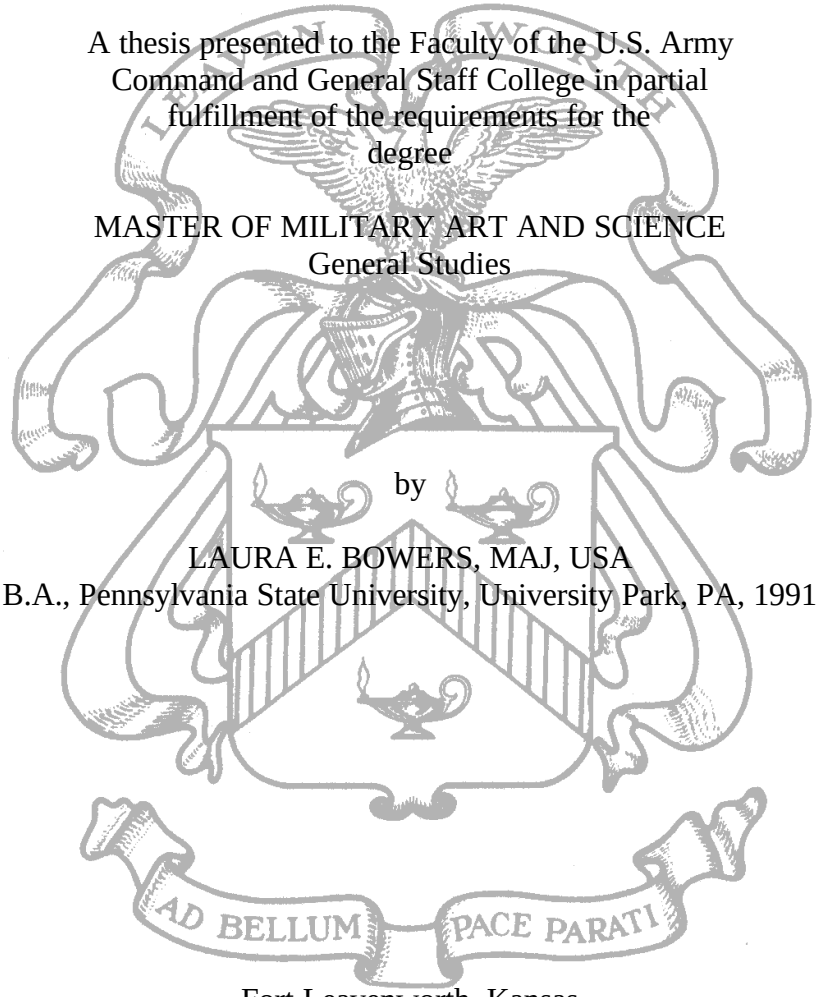

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14. ABSTRACT

Army Medical Department (AMEDD) after-action reviews emerging from healthcare professionals recently redeployed from Operations Enduring Freedom and Iraqi Freedom identified units deploying with insufficient or obsolete medical equipment in their assemblages. The contents of AMEDD sets, kits, and outfits were not optimal for full-spectrum operations. Medical materiel accommodation did not meet clinical demands resulting in upgrades on the fly often achieved by procurement and fielding outside traditional supply-procurement systems. A disparity exists between medical practices in full-spectrum operations and normally accepted standards of professional medical care. The rapid advance of medical science has caused a progressive shift of practice away from the static components held in AMEDD assemblages. This study answers the question: Does the need exist to change the existing medical assemblage lifecycle management process in order to successfully operate in full-spectrum operations? The study leads to the conclusion that the AMEDD must change its process, synchronize with commercial product lifecycles, and improve clinical acceptance. The current process, measured in terms of years, bears no relationship to the lifecycle of materiel. It is not agile, versatile or sustainable enough to keep pace with the ever-changing spectrum of operations and is not responsive to clinical demands, thus indicating diminished capability.

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ABSTRACT

DOES THE NEED EXIST TO CHANGE THE EXISTING MEDICAL ASSEMBLAGE LIFECYCLE MANAGEMENT PROCESS IN ORDER TO SUCCESSFULLY OPERATE IN FULL-SPECTRUM OPERATIONS, by Laura E. Bowers, 91 pages.

Army Medical Department (AMEDD) after-action reviews emerging from healthcare professionals recently redeployed from Operations Enduring Freedom and Iraqi Freedom identified units deploying with insufficient or obsolete medical equipment in their assemblages. The contents of AMEDD sets, kits, and outfits were not optimal for full-spectrum operations. Medical materiel accommodation did not meet clinical demands resulting in upgrades on the fly often achieved by procurement and fielding outside traditional supply-procurement systems. A disparity exists between medical practices in full-spectrum operations and normally accepted standards of professional medical care. The rapid advance of medical science has caused a progressive shift of practice away from the static components held in AMEDD assemblages.

This study answers the question: Does the need exist to change the existing medical assemblage lifecycle management process in order to successfully operate in full-spectrum operations? The study leads to the conclusion that the AMEDD must change its process, synchronize with commercial product lifecycles, and improve clinical acceptance. The current process, measured in terms of years, bears no relationship to the lifecycle of materiel. It is not agile, versatile or sustainable enough to keep pace with the ever-changing spectrum of operations and is not responsive to clinical demands, thus indicating diminished capability.

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TABLE OF CONTENTS

Page

ACRONYMS

AAR	After Action Review
ACAT	Acquisition Category
AD	Active Duty
AF	Air Force
AKO	Army Knowledge Online
AMC	Army Materiel Command
AMDF	Army Master Data File
AMEDD	Army Medical Department
AMEDDC&S	Army Medical Department Center and School
AO	Area of Operations
AOLCM	Army Organization Life Cycle Model
APS	Army Prepositioned Stock
AR	Army Regulation
ARC	Army Requirements Code
ARSTAFF	Army Staff
ASD(HA)	Assistant Secretary of Defense for Health Affairs
ASL	Authorized Stockage List
BOIP	Basis of Issue Plan
CALL	Center for Army Lessons Learned
CBRNE	Chemical, Biological, Radiological, Nuclear and High Explosive
CBTDEV	Combat Developer

CGSC	Command and General Staff College
CHS	Combat Health Support
CL VIII	Army Supply Class VIII (Medical Supplies)
COTS	Commercial-Off-The-Shelf
CONUS	Continental United States
CS	Combat Support
CSA	Chief of Staff of the Army
CSH	Combat Support Hospital
CSS	Combat Service Support
DA	Department of the Army
DAC	Department of the Army Civilian
DEPMEDS	Deployable Medical Systems
DES	Dental Equipment Set
DLA	Defense Logistics Agency
DMMB	Defense Medical Materiel Board
DMSB	Defense Medical Standardization Board
DOD	Department of Defense
DODD	Department of Defense Directive
DODI	Department of Defense Instruction
DOTMLPF	Doctrine, Organization, Materiel, Leader Development, Personnel, Facilities
DSCP	Defense Supply Center Philadelphia
EEG	Electroencephalogram

EKG	Electrocardiogram
EMG	Electromyography
EPW	Enemy Prisoner of War
FDA	Food and Drug Administration
FM	Field Manual
FRP	Full Rate Production
FSC	Federal Supply Catalog
GEN	General
GSW	Gun Shot Wound
GWOT	Global War on Terrorism
HCA	Health Care Activity
HQDA	Headquarters, Department of the Army
IPAT	Integrated Process Action Team
IPR	In Process Review
IPT	Integrated Process Teams
JRCAB	Joint Readiness Clinical Advisory Board
LIN	Line Item Number
LMI	Logistics Management Institute
LRIP	Low Rate Initial Production
LRMC	Landstuhl Regional Medical Center
MASH	Mobile Army Surgical Hospital
MATDEV	Materiel Developer
MDA	Milestone Decision Authority

MEDCOM	Medical Command
MES	Medical Equipment Set
MFMSSSG	Military Field Medical System Standardization Steering Group
MHSEC	Medical Health System Executive Committee
MMS	Medical Materiel Set
MRS	Medical Resupply Set
MTOE	Modified Table of Organization and Equipment
NDI	Non-developmental Items
NSN	National Stock Number
OB/GYN	Obstetrics/Gynecology
OEF	Operation Enduring Freedom
OIF	Operation Iraqi Freedom
OMFS	Oral Maxillofacial Surgery Set
OPTEMPO	Operations Tempo
OR	Operating Room
ORD	Operational Requirements Document
OTSG	Office of The (Army) Surgeon General
PPBES	Planning, Programming, Budgeting and Execution System
PPBS	Planning, Programming and Budgeting System
RC	Reserve Component
RDA	Research, Development and Acquisition
RDTE	Research, Development Test and Evaluation

RFI	Rapid Fielding Initiative
ROE	Rules of Engagement
SB	Supply Bulletin
SBCT	Stryker Brigade Combat Team
SC	Supply Catalog
SKO	Sets, Kits and Outfits
SKOT	Sets, Kits, Outfits and Tools
S&T	Science and Technology
SME	Subject Matter Expert
TAADS	The Army Authorization Document
TOE	Table of Organization and Equipment
TRADOC	Training and Doctrine
TRGDEV	Training Developer
TSG	The (Army) Surgeon General
UA	Unit Assemblage
UAL	Unit Assemblage Listing
UBL	Unit Basic Load
USAMMA	United States Army Medical Materiel Agency
USAMRMC	United States Army Medical Research and Materiel Command

ILLUSTRATIONS

Page

TABLES

Page

CHAPTER 1

INTRODUCTION

Introduction/Background

The purpose of this study is to examine the existing medical assemblage lifecycle management process and explore possible changes intended to increase Army Medical Department (AMEDD) capabilities to successfully operate in full-spectrum operations.

Division and corps medical units are having difficulty maintaining their Unit Basic Load (UBL) in accordance with (IAW) Army Regulation (AR) 40-61 and Supply Bulletin (SB) 8-75-11. This has affected deployment readiness and performance as evidenced in initial After Action Reviews (AARs) for Operations Enduring Freedom and Iraqi Freedom (OEF/OIF). There has been a lack of visibility and full understanding of Unit Assemblage Listing (UAL) readiness requirements resulting in less budgetary priority for Class VIII (CL VIII (medical supply)) sustainment. Additionally, the current Unit Assemblage Listing (UAL) review process is cumbersome, time consuming and inconclusive resulting in lack of communication and standardization. Items in current sets, kits and outfits (SKO) do not meet current operational requirements or technological advancements. Current operational reality as well as future force objectives may require an overhaul of medical materiel capability policies and procedures.

The United States Army is currently in the process of transforming itself into a future force that is more strategically responsive and dominant across the entire spectrum of operations (United States Army War College 2003, 2). The Army vision for transformation to the future force has driven the Combat Support and Combat Service Support (CS/CSS) communities, including the Army Medical Department (AMEDD), to

scrutinize and transform into entities that can provide efficient and effective support to strategically responsive and dominant combat forces at every point in the spectrum of operations. The CS/CSS response to future force objectives is centered on logistics reach operations. The AMEDD's intent for its transformation is to mirror the conceptual theories of CS/CSS reach operations and provide optimal Combat Health Support (CHS) to the future force (Donahue 2002, 3-4).

Inherent to the AMEDD's CHS mission is the extremely demanding requirement for medical materiel that complements technological advancements and casualty requirements. Medical materiel is a key logistics operating system that enables the AMEDD to succeed in its CHS mission. Medical logistics support is essential for the sustainment of the entire healthcare delivery system. It is therefore incumbent that medical materiel transform itself into an operational entity that has all the capabilities to maximize support while minimizing risk (Donahue 2002, 3-4).

The Army Surgeon General, Lieutenant General (LTG) James B. Peake, visited the Central and Southwest Asian areas of operations (AOs) several times from May 2002 through November 2003 and brought back a consistent impression that the contents of the AMEDD's sets, kits and outfits (SKOs) are not current and that demands emerging from theater are not being accurately forecast (Miller 2003b, 1). He therefore directed his Deputy Surgeon General for Force Sustainment, Brigadier General (BG) Richard Ursone, to chair a Medical Assemblage Lifecycle Management Re-Engineering Integrated Process Team (IPT) to work toward a goal of re-engineering the medical assemblage lifecycle management process with the overall purpose to improve medical readiness and

clinical acceptance of SKOs and define a reengineered SKO life-cycle management process (Clines and Miller 2003, 1).

Several anecdotal incidents emerging from current and recent operations identify units deploying with insufficient or obsolete equipment. Units were forced to upgrade their capabilities on-the-fly. These ad hoc or "spontaneous" modernization attempts have characterized every major deployment of the past two decades. For example, equipment such as i-STAT Corporation i-STAT clinical analyzers for quantitative determination of specific analytics in whole blood, Piccolo blood analysis systems and hand-held ultrasound devices were all used during OIF even though they were procured and fielded outside of the traditional supply/procurement system (Clines and Miller 2003, 3). These incidents illustrate the gap between clinical expectations and the realities of what materiel resides in medical assemblages.

AMEDD logistics success on the battlefield is commonly defined as ensuring the right supplies at the right place at the right price at the right time to conserve the fighting strength. Improving the medical assembly lifecycle management process will ensure the AMEDD's ability to rapidly respond to mission changes and technological advances. It will greatly assist in achieving clinical acceptance of fielded and pre-positioned materiel and more importantly ensure optimal clinical outcomes for casualties of full-spectrum operations (Kramer and Syvinski 2003, 2-3).

The rapid advance of medical science has caused a progressive shift of current medical practice away from the static components held in many Army medical assemblages. Healthcare providers will continue to demand the latest medications and

technologies when deployed and logisticians will be expected to provide it (Donahue 2002, 14).

This study is designed to explore, describe and analyze, through After Action reviews from OEF and OIF, the AMEDD's ability to successfully operate in full-spectrum operations with the existing medical assembly lifecycle management process and explore possible changes intended to increase AMEDD capabilities to successfully operate in full-spectrum operations.

Primary Research Question

This study will answer the question, does the need exist to change the existing medical assemblage life cycle management process in order to successfully operate in full-spectrum operations? Specifically, it will analyze the AMEDD's ability to support present-day full-spectrum operations with current medical assemblages and explore possible changes intended to increase AMEDD capabilities to successfully operate in full-spectrum operations.

Secondary Questions

The researcher considers the dependent variable as the capability to successfully operate in full-spectrum operations and the independent variable as the medical assembly lifecycle management process.

In order to answer the primary question, does the need exist to change the existing medical assemblage life cycle management process in order to successfully operate in full-spectrum operations? The following secondary questions are developed to assist in answering the primary question:

1. What is the existing medical assemblage life cycle management process? Defining the medical assemblage lifecycle management process is prerequisite to answering the primary research question. It is important to define the process before identifying required changes to the process.

2. What are full-spectrum operations? Defining full-spectrum operations assists in answering the primary research question. This explanation is imperative in determining whether or not the existing medical assemblage lifecycle management process bolsters the AMEDD's requirement of providing combat health support to U.S. forces across full-spectrum operations.

3. What are the requirements for the medical assemblage life cycle management process in order to successfully operate in full-spectrum operations? Outlining the requirements for the medical assemblage lifecycle management process is inherent to answering the primary research question. By outlining the requirements for the medical assemblage lifecycle management process, it can be determined whether or not the current process is optimized to support full-spectrum operations.

4. What are the shortfalls to the existing medical assemblage life cycle management process in order to successfully operate in full-spectrum operations? Identifying shortfalls to the medical assemblage lifecycle management process supports answering the primary research question. By identifying whether or not there are shortfalls to medical assemblages supporting full-spectrum operations, the researcher will be able to determine whether or not changes are required to the medical assemblage lifecycle management process to successfully operate in full-spectrum operations.

5. What are the risks associated with not changing the medical assemblage life cycle management process in order to successfully operate in full-spectrum operations? Determining the risks associated with not changing the medical assemblage lifecycle management process is essential to answering the primary research question. Examining risks is fundamental to determining whether or not changes are required to the medical assemblage lifecycle management process to successfully operate in full-spectrum operations.

6. What are the benefits associated with changing the medical assemblage life cycle management process in order to successfully operate in full-spectrum operations? Determining the benefits associated with changing the medical assemblage lifecycle management process will explore possible changes that will maximize lessons learned and identify key enablers that will assist in articulating future medical assemblage lifecycle management processes intended to increase AMEDD capabilities to support full-spectrum operations.

Assumptions

1. The United States Army (U.S. Army) will continue to conduct full-spectrum operations.

2. The medical assemblage life cycle management process must have the capability to successfully operate in full-spectrum operations

3. The medical assemblage lifecycle management process is a weakness that indicates diminished clinical capability

4. Standardization of SKOs will be required.

5. Clinicians will continue to deploy with stockpiles of supplies and equipment due to the perception of diminished clinical capability of SKOs.

6. Deployed clinicians will continue to reach back to Continental United States (CONUS) fixed facility hospitals for supplies and equipment due to perception of diminished medical assemblage lifecycle management.

7. Lessons learned from Center for Army Lessons Learned (CALL) and the AMEDD Center for lessons learned are reliable, objective and representative of common issues related to the medical assemblage lifecycle management process.

8. AARs are reliable sources and provide objective assessments of strengths and weaknesses.

9. The Department of Defense will streamline its acquisition cycle.

10. The U.S. Army will streamline its acquisition process.

Definition of Key Terms

Like many other professional organizations, the military has created a unique language that is often misunderstood by civilians, as well as military personnel. In addition, the Army, Air Force, Navy and Marines use service-specific words and phrases that do not necessarily have the same meaning. For this reason, the following alphabetized list clarifies key terms and allows for easy reference while reading this study.

Full-Spectrum Operations: Full-spectrum operations include offensive, defensive, stability and support operations. Offensive operations aim at destroying or defeating the enemy. Defensive operations defeat an enemy attack, buy time, economize forces, or develop conditions favorable for offensive operations. Stability operations promote and

protect U.S. national interests by influencing the threat, political and informational dimensions of the operational environment through a combination of peacetime developmental, cooperative activities and coercive actions in response to crisis. Support operations employ Army forces to assist civil authorities, foreign or domestic, as they prepare for or respond to crisis and relieve suffering (Field Manual (FM) 3-0 2001, 1-15 – 1-16). Points in the spectrum would include peace, support operations, homeland security, stability operations, peacekeeping operations, peace enforcement operations, low intensity conflict, Chemical – Biological – Radiological – Nuclear – High Yield Explosives (CBRNE), major theater war and strategic nuclear exchange.

Health Care Activity (HCA): Health care activities are all TOE and TDA facilities that provide medical care and support. It includes hospitals, clinics, dental activities, veterinary activities, combat stress control, preventive medicine, logistics, and evacuation (Supply Bulletin (SB) 8-75-11 2002, GL-12).

Medical Assemblage: Medical assemblage is a collection of components used by an individual or team, usually supplemented by other assemblages or equipment, to perform a specific medical mission or function. Medical assemblages are major items of supply configuration controlled and assigned a Line Item Number (LIN). Medical assemblages are LIN authorized in accordance with a Basis of Issue Plan (BOIP) to organizations under provisions of The Army Authorization Document System (TAADS) (Sets, Kits and Outfits Management Procedure and Guidance 1991 in Kramer 2003b, 4).

Medical Equipment (including dental and veterinary items): Medical equipment consists of those devices used in the medical diagnosis, therapy, and treatment of injury or disease. This equipment consists primarily of Federal Supply Catalog (FSC) 6500

items that are standardized by the Joint Readiness Clinical Advisory Board (JRCAB) and are procured by the appropriate acquisition agency for TSG to implement health service support for the Army. It also consists of similar commercial, nonstandard items, approved by the Food and Drug Administration (FDA) and marketed as medical devices, used primarily in fixed treatment facilities to provide state-of-the-art patient care. The equipment is maintained and repaired by medical equipment repairers organic to the medical unit or treatment facility or maintenance is provided under contract (SB 8-75-11 2002, GL-14).

Medical Equipment Set (MES): MES is a grouping of medical and other items under a single National Stock Number (NSN), with the components Defense Logistics Agency (DLA) or Defense Supply Center Philadelphia (DSCP) managed. It may possibly be service regulated (SB 8-75-11 2002, GL-14).

Medical Materiel: Medical materiel includes nonexpendable, durable, and expendable supplies used in healthcare activities, medical research and laboratory facilities and other medical related institutions and units in the AMEDD. Nonexpendable Items are items of Army property coded with an Army Requirements Code (ARC) of "N" in the Army Master Data File (AMDF) which require property book accountability after issue from the stock record account. Durable Items are items of Army property coded with an ARC of "D" in the AMDF and do not require property book accountability after issue from stock record account, but do require hand receipt control when issued to the user. Expendable supplies are items of Army property coded with an ARC of "X" in the AMDF which require no formal accountability after issue from a stock record account (DA SB 8-75-11 2002, GL-14).

Medical Materiel Set (MMS): MMS is a set of medical materiel that comprises a unit basic load (UBL). A UBL is supplies kept by using units for use in combat. The quantity is related to number of days in combat the unit may be sustained without resupply. Medical UBL includes MES and other authorized medical items with which a unit deploys (Army Regulation (AR) 40-61 1995, 64).

Medical Resupply Set (MRS): MRS is a set of medical materiel and equipment pre-packaged to operationally sustain the MES for which they were developed. That is, MRS trauma would resupply the MES trauma (AR 40-61 (DRAFT) no issue date available, 64).

Sets, Kits and Outfits (SKO): SKOs are assemblages of components in a container (pouch, box, chest, van, trailer, or shelter) primarily designed to accomplish a specific mission. SKO are Army type classified, controlled by a Supply Catalog (SC), and identified as a single item of supply with a unit of issue set, kit or outfit. Requirements and authorizations for SKO are documented in The Army Authorization Document System (TAADS), (Army Pamphlet 700-60 2002, 2).

Limitations

Several limitations are beyond the control of the researcher. First, this research is limited by time. This study is being conducted while the researcher is simultaneously completing resident Command and General Staff College. Therefore, this study does not interview or survey soldiers, clinicians or commanders currently deployed in OEF/OIF. As a result, this limits the scope of the research to Army Regulations, published reports, articles, AARs, and internet searches. Additionally, this research is not funded. Therefore the researcher has not attended any of the integrated medical after action reviews. Since

this study relies on information from ongoing operations in OEF and OIF, the researcher is limited by availability of and access to published information. Additionally, the classification of this study prevents detailed discussion of current deployed unit location, data and information.

The researcher's experience is limited. This is the researcher's first attempt at a rigorous inquiry to examine, discover and interpret facts about the medical assemblage lifecycle management process. This is the researcher's initial endeavor at the practical application of the collection of information in order to thoroughly investigate theories and determine their acceptance.

Further, this study is limited by the subjective nature of assessing the risks and benefits regarding possible changes to the medical assemblage lifecycle management process to increase AMEDD capabilities to successfully operate in full-spectrum operations.

Lastly, the study is limited by the practical experience of the researcher. The researcher has not served at strategic-level medical materiel acquisition, procurement or combat development, nor has the researcher been deployed to OEF/OIF.

Delimitations (and Scope)

In order to address the research question and subordinate questions, the researcher reviewed, analyzed and synthesized the existing medical assemblage lifecycle management process and its ability to satisfy the AMEDD's requirement to successfully operate in full-spectrum operations. The focus involved limiting the assessment to existing medical assemblage performance during the full-spectrum operations of OEF and OIF. Since OEF and OIF are ongoing, data collection from these operations will

terminate on 31 January 2004. The researcher also limited examination of previous DOD, DA and AMEDD studies regarding the medical assemblage lifecycle management process to those conducted in the last 15 years.

This research project began prior to the U.S. Army naming the current Chief of Staff of the Army (CSA), GEN Peter J. Schoomaker. Prior to GEN Schoomaker being sworn-in, the Army was transitioning from the legacy force--to the interim force--to the objective force. With the new Chief of Staff came a new vision for the Army's transformation; the Army is now transitioning from the current force to the future force.

Significance

This study was designed to explore, analyze and determine whether or not there is a need to change the medical assemblage lifecycle management process in order to increase AMEDD capabilities to successfully operate in full-spectrum operations. The study will determine whether or not the medical assemblage lifecycle management process is designed to keep pace with emerging technology in order to support U.S. forces facing emergent threats (that are growing in sophistication) amid full-spectrum operations. The study will explore possible medical materiel capability solutions designed to increase the AMEDD's capability to successfully operate in full-spectrum operations.

The medical assembly lifecycle management process is an important, timely study not only because U.S. forces are currently engaged in the global war on terrorism (GWOT), but also because streamlining DOD processes such as acquisition cycle permeates Secretary of Defense Donald H. Rumsfeld's priorities over the next year. Additionally, GEN Peter J. Schoomaker expects to see resource and acquisition process

improvement during his tenure to successfully meet the full-spectrum, contemporary operating environment.

Summary and Conclusions

This research study is relevant, timely and should enhance the AMEDD's capability to support the Army's current and future forces involved in full-spectrum operations.

The next chapter, "Review of Li terature," is a review of the current literature on the medical assembly lifecycle management process. It addresses key research sources and their significance. This chapter consists of a review of doctrine, Army manuals, DOD documents, AARs, articles, and internet searches that were significant to the study. It provides the necessary background information and current literature available about the medical assemblage lifecycle management process.

CHAPTER 2

REVIEW OF LITERATURE

Introduction

The purpose of this study is to examine the existing medical assemblage lifecycle management process and explore possible changes intended to increase Army Medical Department (AMEDD) capabilities to successfully operate in full-spectrum operations.

In order to answer the primary question, does the need exist to change the existing medical assemblage lifecycle management process in order to successfully operate in full-spectrum operations, the following secondary questions were developed to assist in answering the primary question:

1. What is the existing medical assemblage life cycle management process?

2. What are full-spectrum operations?

3. What are the requirements for the medical assemblage life cycle management process in order to successfully operate in full-spectrum operations?

4. What are the shortfalls to the existing medical assemblage life cycle management process in order to successfully operate in full-spectrum operations?

5. What are the risks associated with not changing the existing medical assemblage life cycle management process in order to successfully operate in full-spectrum operations?

6. What are the benefits associated with changing the existing medical assemblage life cycle management process in order to successfully operate in full-spectrum operations?

This study is designed to explore, describe and analyze, through after action reviews (AARs) from the Global War on Terrorism (GWOT) in Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF), the AMEDD's ability to successfully operate in full-spectrum operations with the existing medical assemblage lifecycle management process and explore possible changes intended to increase AMEDD capabilities to successfully operate in full-spectrum operations.

This purpose of this chapter is to review, analyze and synthesize the current literature on medical assemblage lifecycle management and how it relates to the primary question, does the need exist to change the current medical assemblage life cycle management process? As the following review of relevant literature demonstrates, there is a need to conduct a study of the medical assemblage lifecycle management process. This chapter is organized into three sections: history of the process, current process and proposals for the future and concludes with a discussion of themes identified during OEF and OIF. The history section will examine how the existing medical assemblage lifecycle management process developed, the current section will describe the existing medical assemblage lifecycle management process, and the proposals for the future section will examine what has been written by subject matter experts regarding changes to increase AMEDD capabilities to support full-spectrum operations.

History of the Medical Assembly Lifecycle Management Process

The military medical services established a single agency to procure medical supplies immediately after World War II when in 1945 the Army-Navy Specification Cataloging Committee was appointed to coordinate the military medical materiel effort. The name was changed to the Armed Services Medical Materiel and Specifications

Committee in 1949 to include the now separate U.S. Air Force. The committee's mission was to furnish coordinated service positions on professional-technical aspects and standards of medical materiel to the procurement agency. With minor changes, the original committee existed until 1957, when by Department of Defense Directive (DODD) it was replaced by the Armed Services Medical Materiel Coordinating Committee. On 1 June 1962, the Armed Services Medical Materiel Coordinating Committee was succeeded by the Defense Medical Materiel Board (DMMB), which was established by DODD 5154.18. The Charter was restated on 26 May 1965. The revised Charter strengthened the role of the DMMB, realigned the staffing and further defined responsibilities. The DMMB was empowered as the sole activity to add items to, delete items from or modify items in the medical section of the Federal Supply Catalog. These decisions represented the coordinated positions of the three Military Medical Services. On 1 July 1975, the DMMB was relocated from the Potomac Annex, Washington DC, to Fort Detrick, Maryland. In 1984, the DMMB and the Military Field Medical System Standardization Steering Group (MFMSSSG) were merged in order to provide an established organization to support the readiness and standardization actions formerly assigned to the MFMSSSG. On 21 June 1984, DODD 5154.18 was replaced by DODD 6430.2 and the Defense Medical Standardization Board (DMSB) was established. The mission of the DMSB was expanded to include directing the development of deployable medical systems (DEPMEDS) that are standardized to the maximum extent possible consistent with the distinct missions of the military services. DODD 6430.2 was revised and restated as DOD Instruction (DODI) 6430.2 on 17 March 1997. The board's mission was further expanded to include standardizing materiel for all contingency and peacetime

health care facilities and assemblages and ensuring that standardization actions support the needs of the military services, procurement actions and availability of medical war reserve materiel and peacetime operating stocks (JRCAB 2003, 2).

The DMSB policy stated that medical assemblages would be standardized to the maximum extent possible consistent with the missions of the services to enhance interoperability, increase efficiency and maximize resources. Further, the Department of Defense (DOD) components could acquire only those medical assemblages submitted for approval by the DMSB and approved by the Assistant Secretary of Defense for Health Affairs (ASD(HA)) (DODI 6430.2 1997, 2). The DMSB would review medical assemblages developed by the services and submit those that met standardization policies to the ASD(HA) for approval. The DMSB would approve or disapprove requests for waiver or deviation. The DMSB would operate as a single point of contact and maintain liaison between Defense Logistics Agency (DLA) and other government agencies in all clinical and technical matters involving standardization of medical materiel (DODD 6430.2 1984, 5).

The Army Surgeon General (TSG) and Commander United States Army Medical Command (MEDCOM) has Army Staff (ARSTAFF) responsibility for medical Research, Development, Test and Evaluation (RDTE) and is also the Army Medical Materiel Developer (MATDEV), combat developer (CBTDEV), training developer (TRGDEV), trainer, user representative and operational tester. TSG uses the following Major Subordinate Commands (MSC) to accomplish these tasks. The United States Army Medical Department Center and School (AMEDDC&S) is the medical CBTDEV, TRGDEV, doctrine developer, and operational tester and evaluator and must ensure

coordination with Training and Doctrine Command (TRADOC). The United States Army Medical Research and Materiel Command (USAMRMC) is the medical MATDEV, logistician and developmental tester and responsible for RDTE, acquisition, and logistics support of assigned materiel in response to approved materiel requirements and must ensure coordination with Army Materiel Command (AMC) and United States Army Medical Materiel Agency (USAMMA) (AR 70-1 2003, 18, 22-23, 25-26).

The Army's medical assemblage lifecycle management process spans multiple organizations for validation and is directly tied to the DOD Planning, Programming and Budgeting System (PPBS) and acquisition cycle as well as the Department of the Army (DA) Planning, Programming, Budgeting and Execution System (PPBES). The intention of the DOD acquisition policy is to ensure that acquisition of defense systems is conducted efficiently and effectively in order to achieve operational objectives of the U.S. Armed Forces and their support of national policies and objectives (United States Army War College 2003, 199). The policy provides DOD guidance for system acquisition policy and procedure and establishes an integrated management framework for a single, standardized DOD-wide acquisition system that applies to all programs.

Within the DOD system there are three acquisition program-size categories with decision authority placed at the lowest practical level. The system is characterized by three activities, four phases, eight work efforts, and three milestones that track a DOD program's progress throughout its development and program life (United States Army War College 2003, 200 and 227). The acquisition system is designed on a 15-17 year cycle.

The model used throughout the Army ensuring capabilities and readiness is called the Army Organizational Life Cycle Model (AOLCM). The AOLCM function provides a systems approach to create, build, or change organizations, while assembling, provisioning, sustaining, maintaining, training and resourcing forces for combatant commanders. Although the AOLCM is a dynamic process; materiel changes may take up to 15 years for development and fielding (Command and General Staff College 2003, 15).

Current Medical Assembly Lifecycle Management Process

In 1998 the DMSB became the Joint Readiness Clinical Advisory Board (JRCAB) but retained its purpose to improve the medical readiness posture of the military services, support more efficient health care, conserve resources, and improve operational flexibility and interoperability. The JRCAB is the primary activity responsible for the effective management of the clinical and technical aspects of medical materiel used in DEPMEDS (AR 40-61 (DRAFT) no issue date available, 2).

The Army Surgeon General (TSG) continues Army Staff (ARSTAFF) responsibility for Medical Research Development Test and Evaluation (RDTE), and remains the MATDEV. The TSG is also responsible for the medical aspects of all other development and acquisition programs ensuring mission area interface with combat developers (CBTDEV) (United States Army War College 2003, 212). US Army Medical Research and Materiel Command (USAMRMC) remains the AMEDD MATDEV, logistician and developmental tester and is responsible for Research, Development, Acquisition (RDA) and logistics support of assigned materiel in response to approved materiel requirements. It continues to function as TSG agency for the materiel acquisition

for set, kit, and outfit (SKO), medical nondevelopmental items (NDI) and commercial-off-the-shelf (COTS) items. US AMEDDC&S continues as the medical CBTDEV (AR 70-1 2003, 18, 22-23, 25-26).

The MATDEV in conjunction with the CBTDEV reviews all initially fielded SKO within the first 12-15 months. Periodic reviews, not to exceed five years, are done to determine whether or not the SKO is satisfying its intended mission (Army Pamphlet 700-60 2002, 12).

AR 40-60, Policies and Procedures for the Acquisition of Medical Materiel establishes basic policy and procedures to develop, acquire, and field medical materiel used by the Army. It describes the materiel acquisition process from initiation (identification of mission need or mission profile) through successful completion of development, procurement, deployment, and management. The acquisition process satisfies materiel requirements generated by doctrinal and organizational revisions to table(s) of organization and equipment (TOE). It further satisfies user-generated requirements, state-of-the-art advancement and initiatives to enhance materiel readiness. AR 40-60 was last updated in 1983 (AR 40-60 1983, 1).

The current assemblage lifecycle process begins with the definition of a required operational capability and ends when the set is replaced or superceded by a more modern assemblage. Stakeholders in the process include the JRCAB, DLA, Defense Supply Center Philadelphia (DSCP), Headquarters Department of the Army (HQDA), Office of The Surgeon General (OTSG), AMC, TRADOC, the AMEDDC&S, USAMMA, Combatant Commanders, and the unit. No single entity oversees the process from conception to completion (Kramer 2003b, 4).

With no single agency overall responsible for the process, it remains disjointed and the timeline for review and coordination considerable. The current lifecycle management process is measured in terms of years and bears no relationship to the lifecycle of the materiel. It remains a thorough but undesirable, cumbersome documentation process that does not reflect clinical needs. The AMEDD continuously modernizes its fixed facilities (Miller 2003b, 2). The possibility of a similar process of continuous modernization should be explored to improve the medical assemblage lifecycle management process to increase the AMEDD's capability to successfully operate in full-spectrum operations.

Proposals for the Future

Providing a historical and theoretical framework, a 1990 research study on Streamlining the Medical Materiel Acquisition Process was conducted by the Logistics Management Institute (LMI) under a Department of Defense contract. This report discussed the critical need for the Army Medical Department to streamline its acquisition policies and procedures to ensure improved materiel for the delivery of healthcare. It identified the AMEDD's acquisition process as challenged to meet clinician needs (Goldman and Slyman 1990, v). The report discussed the need for AMEDD acquisition planning to be better integrated and acquisition operations to be more effectively coordinated. LMI was convinced it was essential for the AMEDD to change business practices if the AMEDD was to effectively define its materiel future and in a streamlined way marshall the necessary resources and management skills to effectively and efficiently achieve that future (Goldman and Slyman 1990, 2-22). The AMEDD proved the ability to make improvements for its fixed healthcare facilities with enhancements

such as Prime Vendor Contracts, however, AARs for OEF and OIF point to lack of process change for medical assemblage lifecycle management.

USAMRMC recently published a white paper titled Medical Assemblage Management, A Case for Change - The Need Exists to Examine All Elements of Assemblage Management and Chart a Course for Improvement. The objective of the white paper was to present a case for change to the current medical assemblage management process (Kramer 2003b, 3). It identified many shortfalls to the current medical assembly lifecycle management process to include process duration, inflexibility, cost, technological obsolescence and lack of integration (Kramer 2003b, 3).

The Army Surgeon General's Medical Assembly Lifecycle Management Re-Engineering Committee identified its goals toward improving clinical acceptance and readiness through a robust set design, review and acquisition process; ensuring SKO keep pace with technology through continuous modernization of contents; reducing review cycle times from 60 to 18-24 months; and improving integration of military requirements with commercial support capability. These recommended changes in business practices point to the need to examine the current medical assemblage lifecycle management process and explore possible changes intended to increase the AMEDD's capabilities to operate in full-spectrum operations (Miller 2003a, 1).

"The war on terrorism does not supplant the need to transform DOD; instead, we must accelerate our organizational, operational, business and process reforms. We should adopt the perspective that now is the time to change the way we operate." – Secretary of Defense, Donald H. Rumsfeld (Holzer 2003, 1).

Transformation permeates Secretary of Defense, Donald H. Rumsfeld's priorities over the next year, according to a list of the top ten legislative areas for 2004. Among the top ten is streamlining DOD processes like shortening the 40-year old PPBS and acquisition cycle time (Holzer 2003, 1). The several-year PPBS and acquisition cycle is a holdover from the days when it was possible to forecast threats several years out because the DOD knew who would be threatening the United States. It is imperative that this cycle be reduced to speed up decision making because new threats that crop up require this type of flexibility (Garamore 2001, 1).

In October 2003, the Chief of Staff of the Army (CSA), General (GEN) Peter Schoomaker outlined the 15 areas where he wants to see improvements made during his tenure. Among the top 15 is Resource Processes, such as feeding soldiers or equipping soldiers. Many of those processes need to be upgraded to meet contemporary standards. The current force has to be able to fight today and it has to be ready to go to war with what it has (Triggs 2003, 1-4). The CSA has since added two additional focus areas and renamed them the 17 Army Focus Areas.

Army future force objectives require that procedures be examined to ensure logistics sustainment in the Theater of Operations. Medical materiel capabilities must transform to meet the requirements of the Army's future force. Current operational reality as well as future force objectives will require an overhaul of medical materiel acquisition policies and procedures. The military's logistics system is simply not geared for the dynamic changes inherent in the medical market place, where 50 percent of the pharmaceuticals sold in U.S. healthcare were not on the market five years ago, and where

the products used by military clinicians in peacetime are supplied by the commercial sector (Clines, Donahue, Mervis, and Miller 2002, 8).

On 3 July 1991, the AMEDD approved the concept for AMEDD participation in the lessons learned process with the objective of developing procedures to monitor the implementation of solutions to lessons learned. Ultimately information would be provided to CBTDEV, TRGDEV and Evaluation and Standardization to assist with obtaining field validation of Doctrine, Organization, Training, Materiel, Leader Development, Personnel and Facilities (DOTMLPF) (Bussey 1991, 1-5). The goals set forth in 1991, are being realized today; the AMEDD remains committed to the lessons learned process with the goal of continued improvement.

Beginning in October 2003, the AMEDD held a series of five consolidated Medical OIF AARs culminating in the Medical OIF in process review (IPR) in December 2003. The objective of the final IPR was to validate and determine corrective action for the collected issues that reach across the AMEDD. The Integrated Concept Teams (ICTs) lead this effort by prioritizing the issues, determining the risk if left unresolved, and fixing the responsibility for resolving the issue. Issues were categorized into near-term requiring immediate resolution to support forces currently involved in operations; current requiring resolution to support forces in the next three to five years; and future requiring resolution to support the Army's Future Force with the end result being a vetted requirement, with a measurable outcome and responsibility for resolution clearly pinned to an appropriate agency (Perugini 2003, 1).

Medical units exposed SKO shortcomings in OEF and OIF. Specifically, the medical assembly lifecycle management process has been identified as a weakness in

numerous AARs. An assumption is that this weakness is an indicator of diminished clinical capability. Therefore, the AMEDD must institute changes to the medical assembly lifecycle management process to better prepare medical units at all levels of care. Medical units will increasingly be deployed on contingency operations during peace, war and operations other than war. For this reason it is imperative that SKOs be flexible for full-spectrum operations. Differences of opinion exist as to how the process should change, but none would disagree that streamlining the medical assembly lifecycle management process is imperative for mission accomplishment for current and future deployments.

Operation Enduring Freedom

A common theme resonating from OEF was that the missions being performed by the Level III Army Medical units generated equipment requirements beyond that of modified table of organization and equipment (MTOE) equipment allowances, creating demands for non-standard equipment as well as specialty augmentation sets (Kissane 2002, 1).

Additionally, the OEF AAR Back Brief at the AMEDDC&S noted slow resupply and limited airflow as common negative threads experienced by many units during OEF. Common threads for recommended improvement included: define, review and validate current capabilities-based Authorized Stockage List (ASL); Unit Assemblage (UA) reviews for updating Medical Equipment Set/Medical Materiel Set (MES/MMS); and establish a national database to synchronize all services' ASLs with a performance metrics system to measure their effectiveness (AMEDDD C&S 2002, 1).

Operation Iraqi Freedom

Several themes resonated from medical units at levels I, II and III including:

1. SKO Unit Assemblage Listing (UAL) is redundant, incomplete or inaccurate. Recommendations include utilizing usage data from this deployment for much needed update with semi-annual requirement thereafter.

2. Of the items in a Medical Resupply Set (MRS), an estimated 50 percent of its items were not needed either at all or in the quantities provided. Recommendations include capturing resupply demand data in order to restructure MRS.

3. Obstetrics/Gynecology (OB/GYN) supplies were not authorized in the quantities required. Medical Equipment Set (MES) Field, GYN Augmentation requires improvement and broader authorization across all army medical units (Garigan 2003, 4).

4. Pediatric Medical Supplies were needed to treat children and infants under Rules of Engagement (ROE) though the UAL does not provide for pediatric supplies. Recommendations include adjusting the UAL to include pediatric supplies and building pediatric sick call and trauma sets for push on request.

5. Specific Soldier Maintenance Medications could not be obtained risking medical complication. With an estimated 50 percent of the current force on some type of chronic maintenance medication, recommendations include augmenting Medical Logistics (MEDLOG) units with expanded formulary for prescription medications for refilling soldier prescriptions.

6. Medical sustainment requirements for twelve-month deployment rotations are vastly greater than for 6-month. Twelve month rotations require physical exams, PAP Smears, treadmill tests, electrocardiogram tests, etc. Therefore recommendations include

approving equipment and supply requirements beyond that on MTOE allowances to preclude sending soldiers away for garrison care at a fixed facility (Place 2003, 2).

7. Neurology practice is austere and lacks some of the supporting capabilities, including electroencephalogram (EEG), and electromyography (EMG), access to laboratory testing for anticonvulsant drug levels, and better access to high resolution imaging capability. Improving the SKO would save on unnecessary evacuations. Many neurosurgery instruments were mailed from Medical Centers (MEDCENs) (Maher 2003, 1).

8. Many dentists brought their own supplies from the rear in order to treat patients due to outdated SKOs. Additionally, units did not receive adequate dental resupply (Medical OIF AAR #3, 20-22 OCT 2003, Issues: Dental Services, 1).

9. No reliable way to get special use meds like snakebite anti-venom, anti-parasitics and anti-epileptics to units spread over a large geographical area (Garigan, E Company, 801st Main Support Battalion AAR, 11 May 2003).

Summary/Conclusion

As the literature review has demonstrated, there is a need to conduct a study of the medical assemblage lifecycle management process to determine whether or not changes are required to increase AMEDD capabilities to successfully operate in full-spectrum operations. The operational environment has changed since the events of September 11th and the military is responding through changes in policy, doctrine, force structure and training. OEF/OIF AARs, Department of Defense Research Studies and US Army White Papers identify shortfalls in the AMEDD's capability to conduct full-spectrum operations with the existing medical assembly lifecycle management process.

Chapter 3, Research methodology, will outline in detail the specific research methods and techniques that were used in the study.

CHAPTER 3

RESEARCH METHODOLOGY

Introduction

The purpose of this study is to examine the existing medical assemblage lifecycle management process and explore possible changes intended to increase Army Medical Department (AMEDD) capabilities to successfully operate in full-spectrum operations.

In order to answer the primary question, does the need exist to change the existing medical assemblage lifecycle management process in order to successfully operate in full-spectrum operations, the following secondary questions were developed to assist in answering the primary question:

1. What is the existing medical assemblage life cycle management process?

2. What are full-spectrum operations?

3. What are the requirements for the medical assemblage life cycle management process in order to successfully operate in full-spectrum operations?

4. What are the shortfalls to the existing medical assemblage life cycle management process in order to successfully operate in full-spectrum operations?

5. What are the risks associated with not changing the medical assemblage life cycle management process in order to successfully operate in full-spectrum operations?

6. What are the benefits associated with changing the medical assemblage life cycle management process in order to successfully operate in full-spectrum operations?

This study is designed to explore, describe and analyze, through after action reviews (AARs) from the Global War on Terrorism (GWOT) in Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF), the AMEDD's ability to

successfully operate in full-spectrum operations with the existing medical assemblage lifecycle management process and explore possible changes intended to increase AMEDD capabilities to successfully operate in full-spectrum operations.

The purpose of this chapter is to describe the research methodology used in the study. For secondary questions one, two, and three, the researcher reviewed and analyzed the literature in Army and Department of Defense (DOD) publications in order to describe one, two, and three.

The research also focused on current force management doctrinal procedures published in DOD and Army publications. This research involved examining the current doctrinal procedures for medical logistics acquisition and force management. The purpose was to determine whether or not current doctrinal procedures had a negative impact on medical logistics operational capabilities. This research was also designed to determine whether or not there were discrepancies between current doctrinal procedures and current medical logistics practices and applications.

Additionally, the research involved examining the proposed recommended changes to the current DOD and Army processes for acquisition and force management. It involved examining current published articles, reports, DOD contracted studies as well as The Army Surgeon General (TSG) appointed Integrated Process Teams for reengineering the medical assembly lifecycle management process.

Preserving stability in a full-spectrum operations environment demands frequent and timely actions. Full-spectrum operations requires a force that is organized, manned, equipped and trained to be more strategically responsive, deployable, agile, versatile, lethal, survivable and sustainable across the entire spectrum of military operations from

major theater wars through counter terrorism to homeland security (Shinseki 1999, 2). There are four focus areas the Army G4 intends to keep preeminent to directly support the Army transition to the more flexible force that is capable of acting rapidly and effectively. These are: connectivity, modern theater distribution, modern reception, and supply chain integration (United States Army G4 2003, 1-3). While logistics achievement in these areas is critical to the Army's ability to operate successfully in full-spectrum operations, it is also imperative that the medical assemblage lifecycle management process simultaneously meet acceptable clinical expectations for successful completion of the medical mission.

For secondary question four, the researcher developed a table to compare the existing medical assemblage lifecycle management process to the requirements for full-spectrum operations. The researcher utilized nine criteria to define the existing medical assemblage lifecycle management process and compared them to the requirement of frequent and timely actions for full-spectrum operations. The researcher applied the TSG's directive that the entire process should be not longer than eighteen to twenty-four months as the standard for relevancy in full-spectrum operations. The criterion was either yes or no.

Table 1. Assemblage Process Capability to Meet Full-Spectrum Operations

Medical Assemblage Lifecycle Process Capability to Meet Full-Spectrum Operations (TSG Directive: 18-24 months)		
CRITERIA	**YES**	**NO**
Step 1 **Operational Capability Defined**		
Step 2 **Review Current Assemblage Capability**		
Step 3 **Review Materiel Requirements and Conduct Allowances Study**		
Step 4 **Determine Set Authorizations**		
Step 5 **Resourcing, Programming and Development**		
Step 6 **Component Procurement**		
Step 7 **Building and Fielding Medical Assemblages**		
Step 8 **Sustain Medical Assemblages**		
Step 9 **Modernization Sustainment**		

The researcher sought to further validate the existing set, kit and outfit (SKO) capability to meet full-spectrum operations by determining whether or not there has been an increase in the workload for the Joint Readiness Clinical Advisory Board's (JRCAB) Item Review Reports Process. A graph was developed to track the workload since the United States Army began supporting full-spectrum operations during OEF and OIF as part of the GWOT. A lack of increase would prove existing sets capable of meeting the operational requirements of full-spectrum operations. An increase would point to deficiencies in current assemblages to meet the requirements for full-spectrum operations. Furthermore, an increase could be an indicator that the assemblage management process is lacking in responsiveness to effect changes on a routine basis.

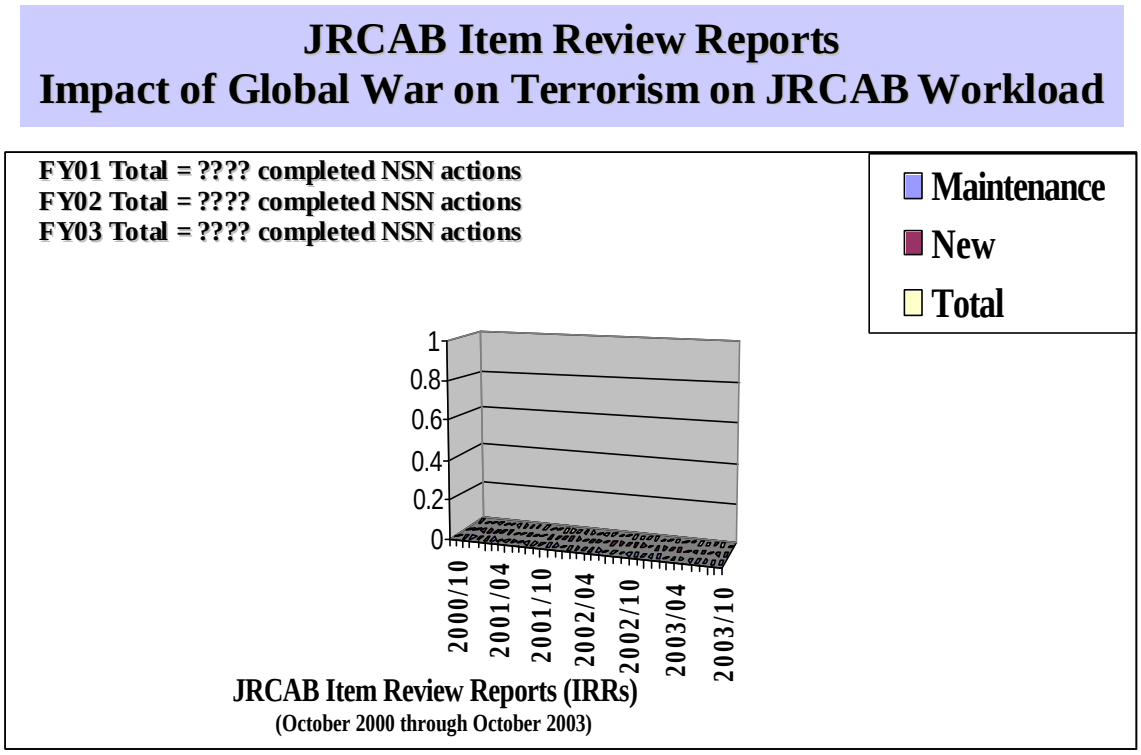

Figure 1. JRCAB Item Review Reports

Source: Joint Readiness Clinical Advisory Board (JRCAB), *JRCAB Command Brief, 2003*, 2

To address secondary questions five and six, the researcher reviewed and analyzed the literature available from after action reviews to describe the risks associated with not changing the existing medical assemblage lifecycle management process in order to successfully operate in full-spectrum operations and the benefits associated with changing the existing medical assemblage lifecycle management process in order to successfully operate in full-spectrum operations.

This involved research of AARs for OEF/OIF as well as Medical Command/Office of The Surgeon General staff trip reports for current operations. It also

included collecting general information on lessons learned regarding medical logistics SKO capabilities in full-spectrum operations in OEF/OIF and obtaining OEF/OIF mission-specific data that had been published regarding medical logistics success/failure for division and corps medical units. Specifically, information was available from the 101st Infantry Division (Air Assault), the 3rd Infantry Division, the 82nd Infantry Division (Airborne), and numerous corps-level medical units to include the 212th Mobile Army Surgical Hospital (MASH) and the 21st, 28th, 47th, and 48th Combat Support Hospitals.

The primary difficulty was the availability of published articles (some of which were still in the draft phase) and the frequency with which new lessons learned information appears on the internet since over 60 percent of U.S. forces are still actively engaged in the GWOT. Additionally, the integrated process team for reengineering the medical assembly lifecycle management process did not complete their overall change recommendations by the November 2003 suspense; the team continues to work toward solutions and convenes committee meetings on a monthly basis.

In addition, the researcher spoke with representatives from the JRCAB, United States Army Medical Research and Materiel Command, the United States Army Medical Materiel Agency, the Logistics Management Institute and members of the medical assembly lifecycle management reengineering integrated process team. The researcher studied numerous unit-level formal after action reports as well as individual reports from Functional Area Consultant's to TSG.

Chapter 4, Analysis, will analyze whether or not medical assemblages in their current state meet, not only clinical expectations for medical mission requirements for

full-spectrum operations, but also whether their lifecycle management processes meet the Army's transformation objectives for the future force to successfully operate in full-spectrum operations.

CHAPTER 4

ANALYSIS

Introduction

The purpose of this study is to examine the existing medical assemblage lifecycle management process and explore possible changes intended to increase Army Medical Department (AMEDD) capabilities to successfully operate in full-spectrum operations.

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successfully operate in full-spectrum operations with the existing medical assemblage lifecycle management process and explore possible changes intended to increase AMEDD capabilities to successfully operate in full-spectrum operations.

The purpose of this chapter is to present, explain, analyze and interpret the research findings. The rapid advance of medical science has caused a progressive shift of current medical practice away from the static components held in many Army assemblages. Healthcare providers will continue to demand the latest medications and technologies when deployed and medical logisticians will be expected to provide them expeditiously (Donahue 2002, 14).

Secondary question one. What is the existing medical assemblage life cycle management process? The existing medical assemblage lifecycle management process follows the Army acquisition policy outlined in Army Regulation (AR) 70-1, which was published 31 December 2003 with an effective date of 30 January 2004.

> The acquisition process consists of a series of management decisions made in the Department of Defense (DOD) or the Army as the development of a materiel system progresses from a stated materiel capability to a fielded, sustained system. The acquisition process is structured in logical phases separated by major decision points called milestones. It is initiated by a decision point, with decision reviews occurring at various other times. Entry into the acquisition process occurs at any point, consistent with phase-specific entrance criteria and statutory requirements and approval from the Milestone Decision Authority (MDA). The materiel acquisition process is divided into three distinct activities (pre-systems acquisition, systems acquisition and sustainment). The three activities are subdivided into five phases: concept refinement; technology development; system development and demonstration; production and deployment; and operations and support. The five phases contain six work efforts: system integration; system demonstration; low rate initial production (LRIP); full rate production (FRP) and deployment; sustainment; and disposal. Milestone B is the point of program initiation for the Army unless the maturity of the program justifies entry into the Defense Acquisition Management Framework at a later point. Milestone C is the decision point at which permission is sought to produce the specified LRIP quantities. If no LRIP is required of the system under review, Milestone C may

then serve as the full rate production decision review. For systems requiring LRIP, the full rate production decision review will fall post-Milestone C and later in the production and deployme nt phase. This is illustrated in the figure 2. All acquisition programs, regardless of Acquisition Category (ACAT), will utilize the new defense acquisition management framework and apply the new terms of reference. (Army Regulation (AR)70-1 2003, 36)

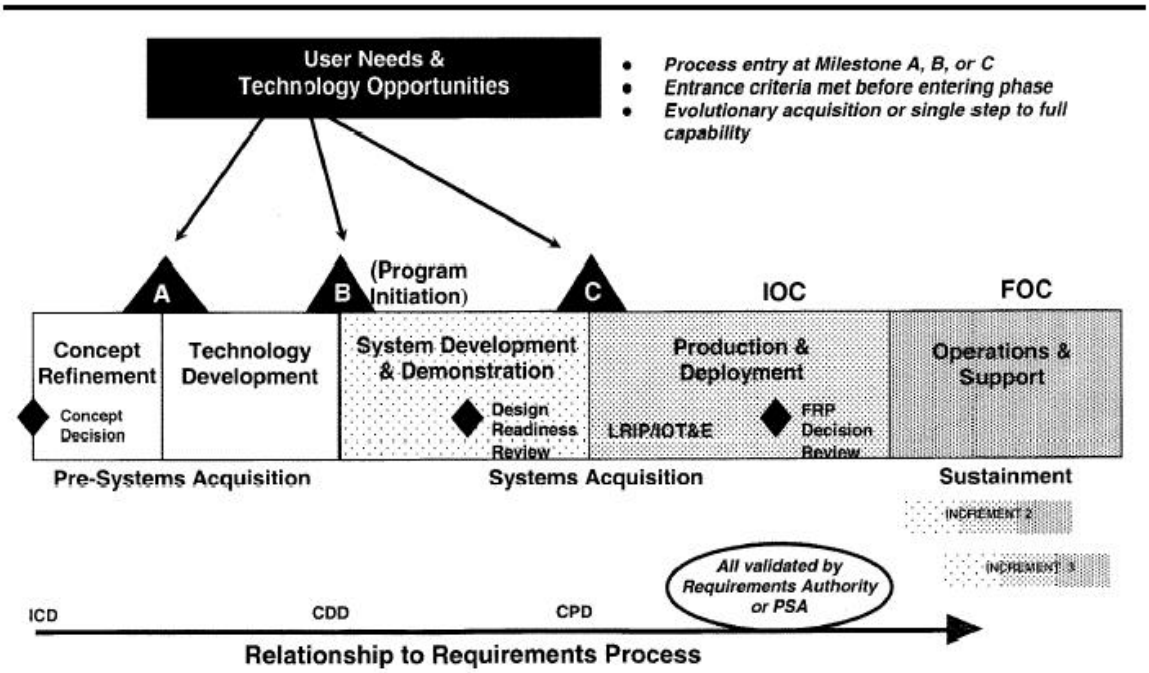

Figure 2. Defense Acquisition Model

Source: U.S. Army, AR 70-1, Army Acquisition Policy, (Headquarters, Department of the Army, Washington, DC, 31 December 2003), 37.

Within the DOD system, there are three acquisition program-size categories with decision authority placed at the lowest practical level. The system is characterized by three activities (Pre-Systems Acquisition, Systems Acquisition, and Sustainment), five phases (Concept Refinement Phase, Technology Development Phase, System Development and Demonstration Phase, Production and Deployment Phase, and

Operations and Support Phase), six work efforts (System Integration, System Demonstration, Low Rate Initial Production, Full Rate Production and Deployment, Sustainment and Disposal), and three milestones (Milestone A - Technology Development Approval, Milestone B - Program Initiation Approval and Milestone C - Low Rate Initial Production Approval) which track a DOD program's progress throughout its development and program life (United States Army War College 2003, 200 and 227). The acquisition system is designed on a 15-17 year cycle.

The model used throughout the Army ensuring capabilities and readiness is called the Army Organizational Life Cycle Model (AOLCM). The AOLCM function provides a systems approach to create, build, or change organizations, while assembling, provisioning, sustaining, maintaining, training and resourcing forces for combatant commanders. Although the AOLCM is a dynamic process; materiel changes may take up to 15 years for development and fielding (Command and General Staff College 2003, 15).

The medical acquisition process depicted by the AMEDD reflects a cumbersome documentation process that meets the requirements set forth by the Defense Acquisition Process. The medical acquisition process also consists of a series of management decisions made in either DOD or the AMEDD as the development of a materiel system progresses from a stated materiel capability to a fielded/sustained system.

The Joint Readiness Clinical Advisory Board (JRCAB) serves as an executive-level body responsible to support the DOD medical readiness mission by enhancing Service medical department cooperation, interoperability, and operational flexibility, while achieving efficient health service support and conservation of resources. The Board

reports to the Medical Health Systems Executive Committee (MHSEC). The JRCAB is chartered to convene and guide joint service Subject Matter Expert (SME) panels in the process of developing and maintaining jointly recommended medical materiel, grouped in Medical Materiel Sets (MMS's), for in-theater medical care. The panels review and validate specific medical materiel sets (to include equipment) needed to undertake the clinical treatment (JRCAB 2002, 7)

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The Army's medical assemblage lifecycle management process spans multiple organizations for validation and is directly tied to the DOD Planning, Programming and Budgeting System (PPBS) and acquisition cycle as well as the Department of the Army

(DA) Planning, Programming, Budgeting and Execution System (PPBES). The intention of the DOD acquisition policy is to ensure that acquisition of defense systems is conducted efficiently and effectively in order to achieve operational objectives of the U.S. Armed Forces and their support of national policies and objectives (United States Army War College 2003, 199). The policy provides DOD guidance for system acquisition policy and procedure and establishes an integrated management framework for a single, standardized DOD-wide acquisition system that applies to all programs.

In 1998, the DMSB became the JRCAB but retained its purpose to improve the medical readiness posture of the military services, support more efficient health care, conserve resources, and improve operational flexibility and interoperability. The JRCAB is the primary activity responsible for the effective management of the clinical and technical aspects of medical materiel used in DEPMEDS (AR 40-61 (DRAFT) no issue date available, 2).

TSG continues Army Staff responsibility for medical research development test and evaluation, and remains the Army Medical MATDEV. The TSG is also responsible for the medical aspects of all other development and acquisition programs ensuring mission area interface with CBTDEV (United States Army War College 2003, 212). USAMRMC remains the AMEDD MATDEV, logistician and developmental tester and is responsible for Research, Development, Acquisition (RDA) and logistics support of assigned materiel in response to approved materiel requirements. It continues to function as TSG agency for the materiel acquisition for sets, kits, and outfits (SKO), medical nondevelopmental items (NDI) and commercial-off-the-shelf (COTS) items. The AMEDDC&S continues as the medical CBTDEV.

The MATDEV in conjunction with the CBTDEV reviews all initially fielded SKO within the first 12-15 months. Periodic reviews, not to exceed five years, are done to determine whether or not the SKO is satisfying its intended mission (Army Pamphlet 700-60 2002, 12).

AR 40-60, Policies and Procedures for the Acquisition of Medical Materiel, establishes basic policy and procedures to develop, acquire, and field medical materiel used by the Army. It describes the materiel acquisition process from initiation (identification of mission need or mission profile) through successful completion of development, procurement, deployment and management. The acquisition process satisfies materiel requirements generated by doctrinal and organizational revisions to table(s) of organization and equipment (TOEs). It further satisfies user-generated requirements, state-of-the-art advancement and initiatives to enhance materiel readiness. AR 40-60 was last updated in 1983 (AR 40-60 1983, 1).

Doctrine assumes adequate transportation and priority for line item support from day one. Further, the majority of the clinical force is not trained of the impact of minimal essential wartime requirements, limited transportation assets, and low transportation priority for Class VIII medical supplies (Kramer 2003a, 6). To this end army medicine is extremely demanding in terms of specialized materiel and services. Medical logistics must be responsive to clinical requirements that are specific to the mission, meet Army transformation expectations and are consistent with Army Combat Service Support (CSS) transformation objectives (Donahue 2002, 2). The challenge for the AMEDD in the twenty-first century is to field the most modern medical equipment available at a time when technological advances are outpacing acquisition and fielding procedures.

Much has changed in the 20 years since AR 40-60 was published. Current procurement & management technology can drastically reduce the timelines in the lifecycle management process. However, the AMEDD acquisitions and medical logistics communities are not fully capturing and incorporating the changing business practices and technologies. New practices and technologies must be documented and mandated in AR 40-60 to incorporate the advances that have been made in reducing the medical assemblage lifecycle management process.

The current assemblage lifecycle process begins with the definition of a required operational capability and ends when the set is replaced or superceded by a more modern assemblage. As shown in figure 3, the process is complex and fragmented in design and execution and expresses different timelines for the Army and Air Force. The process used to develop Army medical assemblages today is depicted in figure 3 (Kramer 2003b, 4).

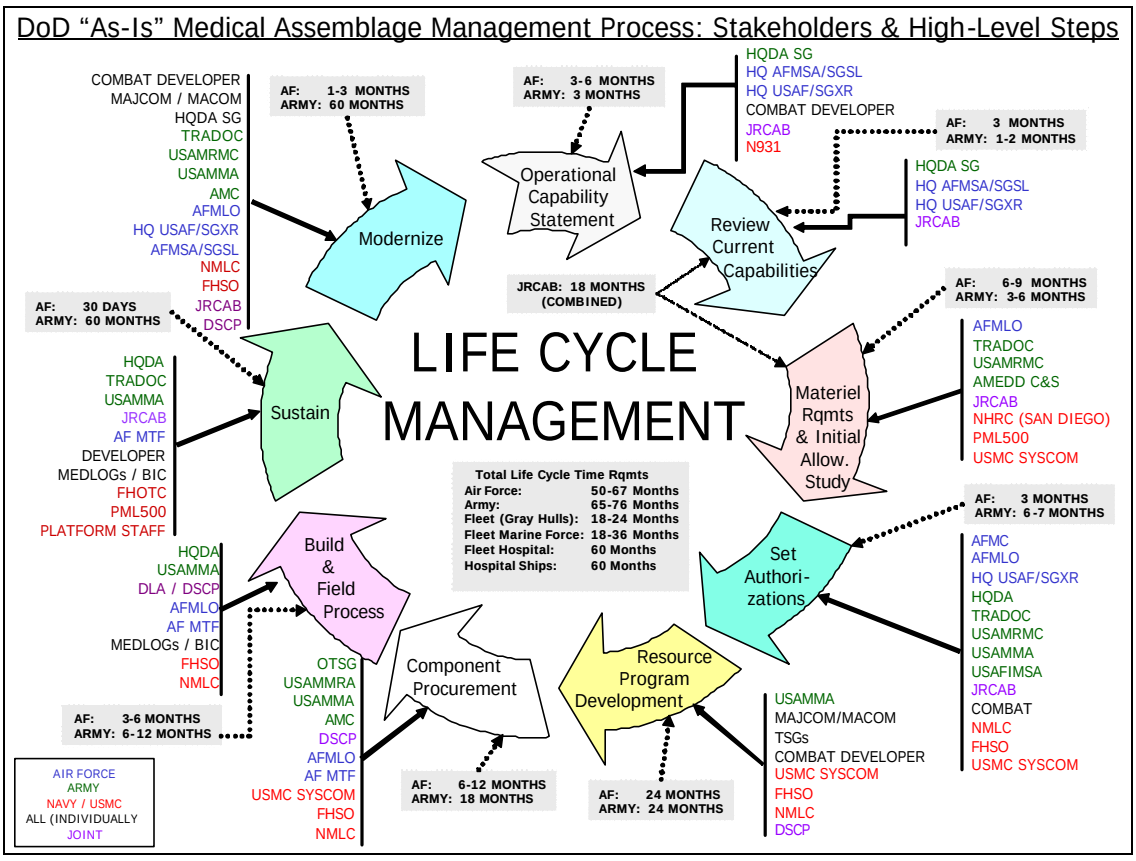

Figure 3. Current Army Medical Assemblage Management Process

Source: Kramer, Deborah E. 2003, *Medical Assemblage Management, A Case for Change, The Need Exisits to Examine All Elelments of Assemblage Management and Chart a Course for Improvement*, (Fort Detrick, MD), 4.

The current medical assemblage lifecycle management process includes nine steps. These nine steps are defined as follows:

Step 1 begins with an operational capability statement being defined (at twelve o'clock position on chart). The statement definition takes approximately three months to complete.

Step 2 reviews current assemblage capabilities. This review takes approximately two months.

Step 3 reviews materiel requirements and conducts an initial allowances study. This step can take anywhere from three to six months to complete.

In step 4, set authorizations are determined. It takes up to seven months to determine set authorizations.

Step 5 consists of three sub-steps; these are resourcing, programming and development. It takes twenty-four months to complete these three sub-steps.

In step 6, component procurement is completed. It takes approximately eighteen months for component procurement.

Step 7 consists of two sub-steps. These are building the medical assemblages and the fielding process associated with these medical assemblages. This can take anywhere from six to twelve months to complete.

Step 8 is the sustainment of the medical assemblage. Periodic reviews, not to exceed five years, are done to determine whether or not the medical assemblage is satisfying its intended mission.

Step 9 depicts modernization. Modernization is also reflected as taking five years to fulfill.

Stakeholders in the process include the JRCAB, Defense Logistics Agency (DLA), Defense Supply Center Philadelphia (DSCP), Headquarters Department of the Army (HQDA), Office of The Surgeon General (OTSG), AMC, TRADOC, the AMEDDC&S, USAMMA, Combatant Commanders, and the unit. No single entity oversees the process from conception to completion (Kramer 2003b, 4).

With no single agency overall responsible for the process, it remains disjointed and the timeline for review and coordination is considerable. The current lifecycle

management process is measured in terms of years and bears no relationship to the lifecycle of the materiel. It is a thorough process, but is so lengthy that the products no longer reflect current clinical needs when they exit the process. The AMEDD continuously modernizes its fixed facilities (Miller 2003b, 2). The possibility of a similar process of continuous modernization ought to be explored to improve the medical assemblage lifecycle management process to increase the AMEDD's capability to successfully operate in full-spectrum operations.

Secondary question two. What are full-spectrum operations? As defined in Field Manual (FM) 3-0 Operations, full-spectrum operations are the range of operations Army forces conduct in war and military operations other than war. Army Forces accomplish missions by combining and executing four types of military operations - offensive, defensive, stability and support operations. Offensive operations aim at destroying or defeating the enemy. Defensive operations defeat an enemy attack, buy time, economize forces, or develop conditions favorable for offensive operations. Stability operations promote and protect U.S. national interests by influencing the threat, political and informational dimensions of the operational environment through a combination of peacetime developmental, cooperative activities and coercive actions in response to crisis. Support operations employ Army forces to assist civil authorities, foreign or domestic, as they prepare for or respond to crisis and relieve suffering (FM 3-0 2001, 1-15 – 1-16).

Points in the spectrum would include domestic disaster relief, humanitarian assistance, peace operations, counter terrorism, peace enforcement operations, limited

conventional conflict, tactical nuclear war, global conventional war and strategic nuclear exchange.

Figure 4. Spectrum of Military Operations

Source: Presentation, Annual AUSA Conference, 2003

Secondary question three. What are the requirements for the medical assemblage life cycle management process in order to successfully operate in full-spectrum operations? To dominate the full-spectrum of threats in our complex world, the Army must be responsive, deployable, agile, versatile, lethal, survivable and sustainable. Those tenets resonate throughout the AMEDD (Peake 2001, 1).

The Army must be able to move seamlessly from all points within the spectrum of military operations and the AMEDD must achieve the ability to support the Army's ever

changing mission requirements. The AMEDD must achieve the capability to move seamlessly from the high intensity conflict of a regional conventional war to the humanitarian assistance and peacekeeping operations of nation building which happen concurrently and nearly simultaneously.

TSG has set a vision for transformation of both the operational and institutional medical components. The operational and institutional medical components are commonly referred to as the AMEDD. The operational AMEDD provides the Army with a deployable medical force that is agile, flexible and capable of being tailored to meet full-spectrum operations. The Institutional AMEDD provides the science, training and infrastructure for delivery and sustainment of the full-spectrum of healthcare to operational forces as well as the Army and DOD family (Donahue 2002, 1-2).

Transformation of the medical force parallels Army transformation. AMEDD transformation will utilize the Medical Reengineering Initiative to move from the current force to the future force.

> Recapitalization and selective modernization of the legacy medical force will maintain the AMEDD's capability to support the full-spectrum of conflict; the medical reengineering initiative will provide medical units with the mobility and flexibility necessary to support the interim force; and medical research and development will provide materiel solutions to lighten the medical footprint and protect the objective force from environmental and hostile threats. (Peake 2001, 1)

The events of 11 September 2001 have validated the need and sense of urgency for Army and AMEDD transformation. The Army is engaged in simultaneous operations along the continuum of conflict, to include the defense of the American homeland. Army operations are supported by capabilities from both its medical operational and institutional components (Donahue 2002, 2).

> As the U.S. and coalition forces crossed from Kuwait, the U.S. Army Medical Department did not have the luxury (to take three to four weeks) to set up combat support hospitals (CSH) or even air ambulance units… the days of the 296-bed CSHs are gone… we need to get smaller. We had to mirror the maneuver units – BG George. Weightman. (Harben 2003, 1)

At the spectrum's low end, the AMEDD is a proven tool of national power. In nation building, disaster relief, humanitarian assistance, and peacekeeping, the medics are often the tooth, not the tail (Peake 2001, 1).

Secondary question four. What are the shortfalls to the existing medical assemblage life cycle management process in order to successfully operate in full-spectrum operations? The researcher developed a chart to compare the existing medical assemblage lifecycle management process to the requirements for full-spectrum operations. The researcher utilized The Army Surgeon General's directive that the entire process should be not longer than eighteen to twenty-four months as the standard. The criterion utilized was either yes or no.

The shortfalls to the existing medical assemblage lifecycle management process in order to successfully operate in full-spectrum operations are inextricably linked with one another. It is beyond the scope of this research to identify every conceivable shortfall and the second and third order effects that the entire Army's force management process wields on the issue. However, with that being said, the researcher identified a number of primary shortfalls, though not all encompassing, that weigh heavily on the existing medical assemblage lifecycle management process. These are the following: First, the current process is too long, three to three and one half years too long to be exact; secondly, the process is not agile, versatile, or sustainable enough to keep pace with the ever changing spectrum of operations; thirdly, the process is archaic and has failed to

leverage supply chain best business practices, primarily in the areas of information management and technology; and finally, the process is not responsive to clinical requirements, specifically materiel and services that are required for acceptable clinical outcomes and completion of the medical mission. These shortfalls are not consistent and supportive of Army transformation, even more so with the move to an expeditionary force.

Recommend review of figure 3 prior to examining table 2.

Table 2. Assemblage Process Capability to Meet Full-Spectrum Operations

Medical Assemblage Lifecycle Process Capability to Meet Full-Spectrum Operations (TSG Directive: 18-24 months)		
CRITERIA	**YES**	**NO**
Step 1 **Operational Capability Defined**	**X**	
Step 2 **Review Current Assemblage Capability**	**X**	
Step 3 **Review Materiel Requirements and Conduct Allowances Study**	**X**	
Step 4 **Determine Set Authorizations**	**X**	
Step 5 **Resourcing, Programming and Development**		**X**
Step 6 **Component Procurement**		**X**
Step 7 **Building and Fielding Medical Assemblages**		**X**
Step 8 **Sustain Medical Assemblages**		**X**
Step 9 **Modernization Sustainment**		**X**

The first four steps of the medical assemblage lifecycle management process do not exceed The Army Surgeon General's directive of 18-24 months when examined

alone. The researcher identifies that the first four steps of the process have the least cumbersome and most timely dockets of the overall process. However, when one adds steps five through nine, the process quickly becomes prolonged. Though the initial four steps of the process do not exceed the 18-24 months set forth by The Army Surgeon General, the steps may need to be worked in a parallel versus a linear fashion where possible in order to gain time for the remaining five steps.

Steps five and six are the most troublesome to the medical assemblage lifecycle management process. Together these two steps take three to three and one half years making it impossible for the contents of the medical assemblages to remain current for acceptable clinical outcomes. The AMEDD follows Army processes which allow for little to no autonomy. These are the same Army processes that Defense Secretary Rumsfeld is determined to abolish by streamlining the acquisition process. Currently the Army is utilizing augmentation processes to insert new technology to the field specifically created to circumvent the archaic systems. These steps are the areas where the AMEDD must concentrate its effort in order for the process to become relevant to meet the demands of a responsive, deployable, agile, versatile, lethal and survivable force capable of successfully operating in full-spectrum operations.

Step seven includes building and fielding the medical assemblages and can take up to 12 months to complete. While this step alone does not exceed the 18-24 month stipulation set forth by TSG, after action reports from OEF/OIF show the inability of DLA to meet the six to twleve month contract build times for medical assemblages. During the time period between OEF and OIF, the USAMMA assumed the responsibility

for building the sets at the DLA warehouses in Pennsylvania because DLA was not meeting critical timelines for deployments.

Step eight, Sustaining Medical Assemblages, can take up to five years for periodic review to determine whether a medical assemblage is satisfying its intended purpose. It clearly does not meet the 18-24 month requirement for reengineering the lifecycle management process. The review cycle time must become more succinct and adhere to a timelier, formal review schedule, perhaps semi-annually, to accomplish the drastic reduction required.

Step nine, Modernization, can take up to five years for completion. By the time the five-year modernization is accomplished, the materiel is no longer considered current, let alone modern, by clinical standards when it exits the process. The process bears no relationship to the lifecycle of the materiel not does it allow for technical insertion.

As a result of this lengthy nine-step process, materiel and equipment are often obsolete by the time they reach the soldier clinician engaged in full-spectrum operations; this results in clinical shortfalls that are detrimental to the ability of the AMEDD to Conserve the Fighting Strength of the soldier engaged in full-spectrum operations. It is not only the soldier that is affected, but also the potential coalition member or civilian on the battlefield.

Working tirelessly to bridge the current gaps in the system is the JRCAB having realized a three-fold increase since the Army began supporting the full-spectrum operations in the GWOT. The national stock number (NSN) line item review statistics indicate that the medical assemblage lifecycle management process was woefully inadequate in meeting the requirements of the soldier medics in the field.

Impact of GWOT on JRCAB Workload

The JRCAB has experienced an increased workload of NSN item reviews of nearly 400 percent, thus proving existing medical assemblages do not meet the operational requirements of full-spectrum operations.

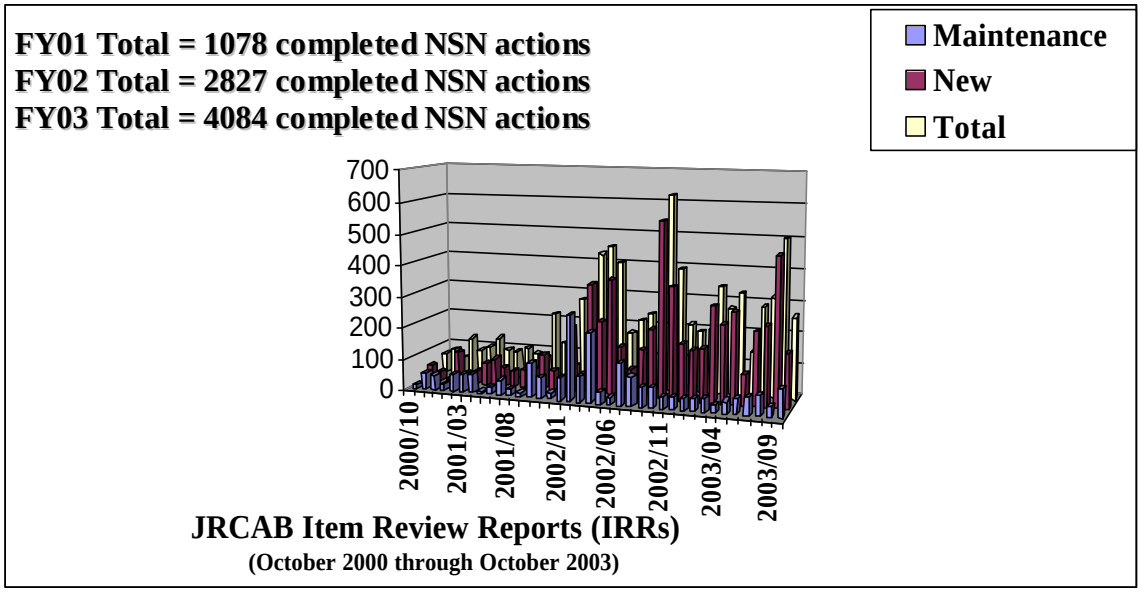

Figure 5. JCRAB Item Review Reports

Source: Joint Readiness Clinical Advisory Board (JRCAB), JRCAB Command Brief 2003.

Secondary question five. What are the risks associated with not changing the medical assemblage lifecycle management process in order to successfully operate in full-spectrum operations? The researcher utilized AAR comments from OEF, OIF and the clinical expectations for materiel support symposium.

As an outsider looking through the window into the medical assemblage lifecycle management process, associated risks would seem intuitively obvious with a process that takes in excess of five years to introduce a new medical technology or pharmaceutical to the field. However, only after the US Army is fully engaged in full-spectrum operations does the process receive the requisite amount of emphasis and participation by the key stakeholders of the process. With that in mind, the researcher discovered the following risks associated with not changing the medical assemblage lifecycle management process in order to successfully operate in full-spectrum operations:

1. There won't be a balanced and synchronized life cycle process that is affordable, militarily useful, supportable and based on relevant, mature technology.

2. The accelerating pace of technological change will not be optimized to offer significant opportunities to enhance the survivability and deployability of the combat soldier.

3. The AMEDD will not maximize the medical professional's ability to conserve the fighting strength on the modern battlefield.

4. The AMEDD won't capture and correct shortfalls in terms of medical capabilities and will be destined to repeat similar mistakes in future operations.

5. Regardless of the challenges and shortfalls, medical providers will develop work-arounds to the medical logistics system to accomplish their mission because the lives of American soldiers depend on it.

The theme resonating from the clinical expectations for materiel support symposium of 24 Army clinicians with recent deployment experience identified that War is Job #1. Clinicians are warfighters first and peace-time medical care providers secondly.

The clinicians representing a wide variety of clinical specialties expressed the frustration with their inability to use the medical logistics system to acquire needed materiel. There exists a disparity between medical practices in OEF and OIF and the normally accepted standards of professional medical care. A greater emphasis should be made to reduce the delta between the two. The availability of modern technology and supplies is essential to providing the best possible standard of care. Anything less could place soldiers lives at risk (Williams 2004, 6-7).

Medical units will provide care to more than just injured Americans. The top priority for all medics on the battlefield is the care of American troops. Nevertheless, it is not the sole priority. Care for Enemy Prisoners of War (EPWs) and civilians injured by U.S. forces are also required. Additionally, sick or injured refugees, displaced persons or others may be provided humanitarian medical assistance in accordance with medical rules of engagement.

There is a clear expectation on the part of participating clinicians that the medical logistics system must become more responsive and more flexible (Miller 2004, 2-3). In addition to treating combat trauma, medical assemblages must conform to the requirements of enemy prisoners of war, displaced civilians of all ages to include children, and chronic conditions of civilian contractors on the battlefield (Weightman 2003, 1-2).

The inherent risks associated with an obsolete and cumbersome process will be depicted through historical vignettes from OEF and OIF in Appendix 1.

Secondary question 6. What are the benefits associated with changing the medical assemblage lifecycle management process in order to successfully operate in full-

spectrum operations. The researcher utilized AAR comments from OEF, OIF and the clinical expectations for materiel support symposium.

As discussed earlier in this chapter under risks, just as it would appear intuitively obvious to the outsider looking through the window into the medical assemblage management process what the risks are. So too, would it appear intuitively obvious to the same outsider what the benefits are. It is now, only after we have been fully engaged in full-spectrum operations for almost three years, that the medical assemblage lifecycle management process receives the requisite amount of emphasis and participation by the key stakeholders of the process. Just as with risks, the researcher realized the following benefits are associated with changing the medical assemblage lifecycle management process in order to successfully operate in full-spectrum operations:

1. Resolves shortfalls in medical capability, accommodates technology breakthroughs and therapeutic discoveries.
2. Reduces cycle time.
3. Decentralizes responsibility.
4. Emphasizes evolutionary acquisition and cost realism to satisfy operational needs.
5. Ensures operational supportability reducing risk.
6. Rapid and effective transition from science and technology (S&T) to acquisition to production or products.
7. Integrated & effective operational support.

Each one of the aforementioned seven benefits associated with changing the current medical assemblage lifecycle management process is inextricably linked. In

theory you can never truly realize any one individual benefit without having the others. It is this symbiotic relationship that must be achieved and maintained to realize the ultimate goal of a truly responsive, agile, versatile, medical assemblage management lifecycle process that is capable of operating efficiently and effectively in full-spectrum operations.

First and foremost, the benefit of streamlining and simplifying the medical assemblage lifecycle management process should resolve the shortfalls in the current medical capabilities by accommodating technology breakthroughs and therapeutic discoveries. Additionally, by streamlining and simplifying the medical assemblage management lifecycle process you inherently streamline and simplify the procurement process in order to reduce development and production cycle times as well as program costs. As addressed earlier, this can only occur when the second benefit listed above is done in concert with the other. This is the symbiotic relationship that the researcher is referring to. Decentralized responsibility provides streamlined and effective management. By the AMEDD utilizing a decentralized, streamlined management structure in the medical assemblage lifecycle management process, characterized by short, clearly defined lines of responsibility, authority, and accountability they would realize the flexibility, responsiveness, innovation, and discipline required to adequately support U.S. forces in full-spectrum operations, not to mention this is mandated in DOD Directive 5000.1. The benefit of emphasizing evolutionary acquisition and cost realism to satisfy operational needs is that knowledge about key aspects of a particular medical technology or therapeutic will be readily available within the 18 to 24 month timeline that TSG has directed. Furthermore, this benefit will reduce technology risk, will demonstrate technologies in a relevant environment and readily identify technology alternatives prior

to program initiation. By conducting market research and analysis to determine the availability, suitability, operational supportability and interoperability, the AMEDD can ensure operational supportability and reduce risk prior to procurement and fielding. An example of this would be procurement or modification of commercially available products, services and technologies from domestic or international sources, or the development of dual use technologies. A final example of this benefit could be the additional production or modification of previously developed U.S. and/or allied medical systems or equipment thus enabling integrated and effective operational support.

If we built a medical assemblage lifecycle management process today, it would not look like the one currently in place. Today's system relies heavily on an archaic, outdated architecture that is an impediment to change. The time has come to totally revamp the medical assemblage lifecycle management process.

Conclusions, summary of results and recommendations will be discussed in Chapter 5, Conclusions and Recommendations.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Introduction

The purpose of this study is to examine the existing medical assemblage lifecycle management process and explore possible changes intended to increase Army Medical Department (AMEDD) capabilities to successfully operate in full-spectrum operations.

In order to answer the primary question, does the need exist to change the existing medical assemblage lifecycle management process in order to successfully operate in full-spectrum operations, the following secondary questions were developed to assist in answering the primary question:

1. What is the existing medical assemblage life cycle management process?

2. What are full-spectrum operations?

3. What are the requirements for the medical assemblage life cycle management process in order to successfully operate in full-spectrum operations?

4. What are the shortfalls to the existing medical assemblage life cycle management process in order to successfully operate in full-spectrum operations?

5. What are the risks associated with not changing the medical assemblage life cycle management process in order to successfully operate in full-spectrum operations?

6. What are the benefits associated with changing the medical assemblage life cycle management process in order to successfully operate in full-spectrum operations?

This study is designed to explore, describe and analyze, through after action reviews (AARs) from the Global War on Terrorism (GWOT) in Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF), the AMEDD's ability to

successfully operate in full-spectrum operations with the existing medical assemblage lifecycle management process and explore possible changes intended to increase AMEDD capabilities to successfully operate in full-spectrum operations.

This purpose of this chapter is to discuss the results of the research.

Clearly, the study shows that the need exists to change the medical assemblage lifecycle management process in order to successfully operate in full-spectrum operations. There is a definite gap between the clinical requirements for full-spectrum operations and the realities of what materiel resides in medical assemblages. Military medical set life cycles are out of synchronization with commercial medical product life cycles. Further exacerbating this problem is the lack of funding. Programs simply are not fully funded.

The problem is not a new one. Medical logistics observations made after the American Civil War include: Preferred medications were not available on the table of supplies; medical supplies were often left behind in order to not impact movement; equipment and supplies were required to care for indigent volunteers, displaced persons and refugees; military doctors lacked the knowledge of military procedures; and transportation of medical materiel had low priority (Kramer 2003a, 6)

As it was then, it is now.

Medical assemblages were designed to meet the minimum essential wartime requirements of primarily trauma care of a young, healthy male force that when injured would either be returned to duty or stabilized and evacuated within the established evacuation guidelines (Kramer 2003a, 6).

With immature theaters rising up in austere environments such as Afghanistan and Iraq; the battlefield becoming more asymmetrical in nature; and the typical lengths of deployment increasing to beyond twelve months; the AMEDD must leverage new acquisition policies and procedures that are more timely and in concert with typical commercial lifecycles and business practices. The AMEDD no longer has the luxury of taking five years to develop and field new medical equipment and therapeutics. Volunteer soldiers operating in the current full-spectrum, asymmetrical battle field deserve clinicians who are thoroughly resourced with the most up-to-date technological advances available to conserve their fighting strength. The implication for the AMEDD is that it must shorten development and fielding times and increase its ability to envision and conceive future medical capabilities.

Implementing rapid process change is possible. We recently saw this executed with the Stryker Concept. The US Army's Stryker Brigade Combat Teams (SBCTs) were conceived in 1999 by the then Chief of Staff of the Army, General Shinseki, to create a force that would be lighter and more deployable than existing Army armor and mechanized units, but which would have vastly more punch than light infantry divisions (O'Reilly 2003, 13). The brigade-sized unit, visualized in 1999, deployed to Iraq in October 2003.

Just as the Army did with the Stryker Brigade Combat Team, the AMEDD must initiate and implement needed changes to the medical assemblage lifecycle management process in order to realize the recommendations spelled out in countless AARs for OIF and OEF.

The operations tempo (OPTEMPO) for the AMEDD has never been higher. The Army is in the midst of the largest troop rotation since World War Two. Additionally, with currently 370,000 forces deployed in 120 countries, the time for changing medical logistics policies and procedures is now. The AMEDD must capitalize on the synergism of clinician experience, assessment and evaluation as outlined in countless AARs. The future of the AMEDD medical assemblage lifecycle management process hangs in the balance. The connotation for the AMEDD is that it must develop a new timeline for the Medical Assemblage Lifecycle Management Process in order to successfully operate in full-spectrum operations. Never before has the AMEDD had the potential to have such a dramatic and immediate impact on systematic acquisition and materiel processes.

Rapid Fielding Initiative (RFI), an Army initiative to speed procurement of essential items for soldiers, began early in 2002, during Operation Enduring Freedom in Afghanistan. RFI has greatly streamlined acquisition processes that previously took months and years to supply new or improved equipment to soldiers. Using a variety of innovative methods, such as working with existing contractors to refine equipment or purchasing and adapting commercial, off-the-shelf items, RFI has reduced some acquisition cycles to weeks or even days (Program Executive Office Soldier Rapid Field Initiative Overview 2004, 1-2). The AMEDD should adopt similar inductions to rapidly adapt commercial technology for immediate fielding to hospitals engaged in the GWOT.

The AMEDD has initiated steps in the right direction toward improving the human and technological enablers of doctrine, organizations, training, materiel, leader development, personnel, and facilities (DOTMLPF). This study examined the “M” portion of DOTMLPF, however it is only through the synergy in parallel advances to all

areas will the AMEDD achieve the full potential of the materiel solutions. For example, the problems with the lack of pediatric supplies in full-spectrum operations cannot be solved without examining organizational changes. The AMEDD has recently penned an organizational solution which parallels the materiel efforts. It includes a provision for a specialty care augmentation team as part of the Medical Reengineering Initiative (MRI) Combat Support Hospital (CSH). Included in this specialty team would be pediatricians, OB/GYN specialists, preventive medicine personnel, community health nurses, and family physicians. The augmentation team would be authorized a humanitarian Medical Equipment Set (MES). All of the second and third order effects which encompass the other DOTMLPF functional areas must be worked in parallel to ensure adequate solutions to maximize what that pediatrician can effect with the supplies in the humanitarian set. Additionally, we cannot make materiel additions and solutions to sets, kits and outfits without ensuring adequate organizational transportation solutions as well.

Web-based sharing initiatives by subject matter experts to include those clinicians currently deployed and recently redeployed are critical to ensuring the most up-to-date information sharing to minimize materiel errors and maximize standardization. Web-based sharing will also ensure rapid response to organizations involved in acquisition, standardization, fielding and training such as the AMEDDC&S, USAMRMC, and JRCAB. The AMEDD has developed an extensive web-based AAR database through information sharing collaborative pages within Army Knowledge Online that will aid in developing evidence based materiel acquisition tools to ensure mission configured loads versus standard outdated assemblages. This endeavor has already minimized lessons relearned.

The AMEDD has also incorporated a liaison to the U.S. Army G8 staff section to ensure AMEDD participation in Army-wide programming initiatives to include the RFI. The RFI program has been a valuable avenue for rapid fielding of one-handed tourniquets and hemostatic dressings. Fast tracking systems should be maximized by the AMEDD where possible.

The AMEDD should also leverage its ability to meld tactical and garrison strengths to include the medical logistics acquisition process. Tactical organizations could adopt garrison solutions to problems such as resupply of soldier maintenance medications and surgical case based logistics pre-packs in lieu of bulky medical resupply sets.

Recommendations for further inquiries include the following:

1. Developing and implementing a Class VIII modeling tool which incorporates clinician recommendations and supplier availability.

2. Comparison of Army, Navy, Air Force and Marine Corps Medical Acquisition Procedures with overall goal of a Class VIII executive agent for Supply Chain Management for Joint Operations.

3. Examining capabilities based Class VIII requirements.

4. Resupplying soldier maintenance medications in the theater of operations.

This study began asking whether or not the need existed for the AMEDD to change the medical assemblage lifecycle management process in order to successfully operate in full-spectrum operations. While the conclusion is a resounding yes, the tough part that remains for the AMEDD is figuring out how.

APPENDIX A

OEF AND OIF MEDICAL ASSEMBLAGE RISK ASSESSMENTS

While current AMEDD medical assemblages are best prepared for combat trauma, clinicians operating in OEF and OIF identified areas for improvement, specifically, in the areas of pediatrics, obstetrics and gynecology, oral maxillofacial surgery, dental, laboratory, and neurology. Additionally, numerous units had difficulty responding to the high volume of sick call conditions.

Pediatrics

> Each of the more than forty major conflicts since the end of the cold war has been associated with catastrophic public health emergencies. In each emergency, over 70 percent of the victims were civilians, primarily children and adolescents – F.M. Burkle (Callahan 2003, 4)

Infants and children will become casualties during combat operations, and the AMEDD must be able to adequately provide treatment. Currently the U.S. Army does not have a pediatric medical assemblage. The AMEDD's primary mission is to care for U.S. and coalition forces. Despite this fact, pediatric patients are brought to U.S. Army facilities and in certain cases must be cared for in accordance with the medical rules of engagement as well as Geneva conventions.

> The importance of pediatric capability at the hospital-level was one of the major findings from the pediatric consultant's surgical after action report of the initial phase of operation Iraqi Freedom. Specifically, facilities were inadequately resourced to handle pediatric patients (Callahan, 2003, 7).

> The importance of neonatology capability was also noted by the neonatology consultant. "I foresee an additional role for Army Neonatologists during the reconstruction phases of war. Army neonatologists are skilled in the care of both critically ill and healthy newborns as well as the maternal factors that contribute to adverse neonatal outcomes. This expertise may be of assistance in the planning and actual care of infants as the countries rebuild". (Moores 2003, 1).

> The 212th MASH was the only Army Level III hospital in Iraq for the first 19 days of OIF. A total of nine pediatric patients were admitted to the MASH with three of the nine requiring immediate surgery. The MASH UALs do not provide pediatric supplies. For this deployment, each of the clinical sections adjusted their inventories on a limited basis to provide for some pediatric care. (212th MASH 2003, 1)
>
> The 101st Airborne Division (Air Assault) encountered several occasions where treatment of children and infants under ROE was hindered due to a lack of appropriate medical supplies. The division does not normally stock such supplies and the push of critical supplies was too slow of a process. (101st Airborne Division (Air Assault), Chapter 17, 17-16).
>
> The Deputy Commander for Clinical Services for the 47th Combat Support Hospital (CSH) stated the 47th CSH also experienced pediatric casualties. "Despite all of the rhetoric to the contrary, we did see children at the 47th while we were in Kuwait… the smallest child we saw was approx 3 weeks old. Several children were members of the "closed-head club" after being struck by coalition vehicles as they darted out into the road to obtain handouts from troops. Lastly, we had the children who were traumatized either by direct contact with the enemy, or by picking up and then dropping some type of unexploded ordinance – LTC Steve Bolt, DDCS 47th CSH. (Callahan 2003, 6)
>
> And finally, a clinician at the 48th CSH stated, "I was assigned as a Pediatric Hospitalist supporting Operation Enduring Freedom. The 48th CSH was the busiest since the days of Vietnam. We averaged 2 landmine strikes per day; half of the victims were children. This was difficult, as I am not a trauma specialist. I saw two 3 year olds with gun shot wounds to the head. I coded a child caught between two trucks – MAJ Joseph Baltrun, Pediatrician, 48th CSH. (Callahan 2003, 6)

<u>OB/GYN</u>

Women's health concerns were exacerbated by the ever increasing numbers of female soldiers in the Army, specifically in the Combat Support (CS) and Combat Service Support (CSS) units. Units were inadequately prepared to treat the most basic gynecological conditions with equipment and supplies authorized by current MTOEs.

One of the commonly used malaria prophylaxis included doxycycline which produces a common side effect of candidal vaginitis (yeast infection) however

gynecological sick call supplies were limited. The simple treatment of oral diflucan or vaginal cream was not adequately forecasted or resourced (Skidmore 2003, 1).

The Women's Health Consultant expressed inconsistent availability of oral contraceptive pills in the theater of operations. Many women who were using oral contraceptive pharmaceuticals ran out and none were available to them (Dunlow 2003, 1-2).

The 212th MASH was inadequately prepared to treat most basic gynecological conditions with the equipment authorized by MTOE (212th MASH 2003, 1).

Oral Maxillofacial

Improved armor plating protects a soldier's torso, greatly improving survival on the battlefield in OEF. However head, neck, and face injuries accounted for 15 percent of battle injuries. While the oral maxillofacial surgeon was authorized at the Combat Support Hospital, the hospital lacked the oral maxillofacial surgery equipment set. None of the deployed EAC hospitals deployed or fell in on Army Pre-positioned Stock (APS) with organic oral maxillofacial surgical equipment capability though they all deployed with oral surgeons. Oral surgeons who deployed with these units found themselves with rudimentary instrumentation to accomplish complex clinical cases and almost zero capability to treat oral maxillo-facial trauma (Shelley 2003, 31-32). This deficiency has been identified, approved, and is awaiting resourcing and fielding. The ORD for the oral maxillofacial surgery (OMFS) set (M477) was approved by HQ's Department of the Army in March 2003. With the current medical assemblage lifecycle management process, there was no way for the set to be funded, built and fielded to support initial forces in OIF.

Dental

The dental equipment sets lacked the state-of-the-art equipment AMEDD dental professional have become used to working with in AMEDD fixed facilities. Outdated, aged equipment in the Dental Equipment Sets did not perform to clinical expectations in the challenging OIF environment. Dental equipment had recurring maintenance problems. Further complicating matters was the fact that repair parts for (in some cases) 30 year old assemblages were difficult or impossible to obtain. Absent from current set authorization was the digital dental X-Ray system, a clinical capability that is required but not currently authorized in a DES (Medical OIF AAR #3, 20-22 OCT 2003, Issues: Dental Services, 1).

While the forecasting of dental resupply was achieved, supplies were not acquired. Dentist resorted to calling back to home stations to acquire Class VIII dental supplies (Medical OIF AAR #3, 20-22 OCT 2003, Issues: Dental Services, 1).

Laboratory

Insufficient lab tests were available in the field, specifically tests for burns (magnesium and phosphate), cardiac enzyme tests, thyroid screening, cerebral spinal fluid testing, depleted uranium exposure testing, as well microbiology testing (Medical OIF AAR #2, 15-17 OCT 2003, Issues: Lab and Blood Management 2003, 1).

Labs did not have the capability of analyzing basic specimens required for a thorough gynecological exam (212th MASH 2003, 1).

The current pharmacy UAL was not configured to handle the significant number of spinal cord injuries that occurred during OIF. Specifically, within the first two weeks

of the operation, the hospital ran short of the drug, Solumedrol. The unit did not receive resupply; none was available in theater (212th MASH 2003, 1).

Labs encountered mission delays due to reagents either arriving late or out of appropriate temperature control. Thermal management was often unsuccessful for temperature sensitive supplies such as lab reagents, pharmaceuticals and vaccines. The higher temperatures in the environment caused reagents to become unstable, shortening shelf life (Medical OIF AAR #2, 15-17 OCT 2003, Issues: Lab and Blood Management 2003, 1).

Temperature expiration of blood was to be expected in the desert, but far too much blood was wasted due to poor temperature control capability. The existing blood refrigeration system, THERMOVAC, was not adequate for the environment resulting in many job orders for repair and the loss of 215 units of blood at approximate cost of $250,000. Its internal dimensions did not provide enough space to keep more than 30 units of blood. Also, the motor in the system is not designed to operate in environmental temperatures of more than 105 degrees Fahrenheit. The current operating environment requires a refrigeration system that can operate in temperatures of more than 130 degrees Fahrenheit (62d Medical Group 2003, 3).

Neurology

Specialty teams, such as head and neck, eye surgery, neurosurgery, infectious disease and pathology lacked comprehensive equipment sets. For example neurology capability lacked EEG and EMG machines (Skidmore 2003, 1).

Sick Call

An overarching theme among units was that sick call requirements were severely underestimated. Adding to this was an extreme difficulty in resupply soldier maintenance medications. There was no process to identify individual requirements for prescription medications for AD, RC, DAC and contractors (MEDLOG Lessons Learned Observations 2003, 5).

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